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ABSTRACT

This study examines the viability of time limit as an independent variable for investigating the decision-making process. Three major aspects of time and decision making are investigated: (1) time and accuracy of group decision, (2) time and member satisfaction with the group decision, and (3) time and perceived accuracy of group decision. A pilot study was first conducted to determine representative time limits for a specific task. The major study involved 220 undergraduates randomly assigned to 28 groups of five members each. These groups were assigned to one of four time limit conditions (short, medium, long, and none) and were asked to establish a ranking of a priority list of items recommended for survival on the moon. Each member was then asked to complete satisfaction measures following the decision. The results indicate that time limit can function as a viable independent variable in group decision making for the type of task used. (LG)

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The Effects of Time Limit on Correctness of Decision and Member Satisfaction in Decision-Making Group Discussions

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CS 500 188

The Effects of Time Limit on Correctness of Decision and Member Satisfaction in Decision-Making Croup Discussions

Time has always been a major factor in the relations of Western Man (Priestly,]964). Business deals rely on the fulfillment of contract deadlines, educational competence is based on the number of hours accumulated, and transportation is keyed to the movement of the clock. Yet, the importance of this powerful force to decision making has been virtually unexplored. Consequently, this project sought to investigate three major aspects of time and decision making;]) time and accuracy of group decision, 2) time and member satisfaction with the group decision, and 3) time and perceived accuracy of group decision.

Previous Research

As a subject of experimental investigation, time has been explored rather extensively by other disciplines. Alvin Toffler (]970) offered a large number of hypotheses relating specifically to the effects of time on human relationships. He postulates that a decrease in the "durational expectancy" of any relationship will cause a decrease in the intensity of involvement with the relationship. The result of this is a phenomena referred to as "transcience", or the relative absence of permanence as a desirable concept. Toffler applies this principle to decision making in urban design by citing examples of great changes in architecture and city planning as a result of a desire for impermanence. A significant amount of research has been done which shows the effects of time on physiological and psychological factors. Orme (]969) surveyed a body of research which is fairly representative of this type of analysis. The effects of physiological reaction time on perception and personality make up the bulk of this research. Orme cites research demonstrating a relationship between chronological age and learning ability. The ability to solve new problems seems to decrease steadily from age 25 while the ability to use aquired information remains fairly stable from middle age onward.

Social-anthropologist, Edward T. Hall has popularized the notion of varying concepts and problems of time among different cultures. Similarly, psychologist Strurt (]925) explored

philosophy and time and contrasted cultures and their concepts of time. Her major consideration was the time orientation of various cultures. Some Asian cultures, for instance, have very little concept of future or present time, while some African cultures have virtually no concept of the past. The Trobriand Islands are cited as an example of a society which conceives all past events as included in the universal present or in a different but not necessarily past time (Lee, 1949).

Other research, however, has dealt more specifically with issues of learning and communication. Pumphrey (1951) related perception of time with the origins of human speech. He held that in its affective sense, speech is oriented more to the present time. When it becomes more of a cognitive instrument, more of the past and future are included.

In research dealing more specifically with communication, time has received very little attention, especially as an independent variable. Farley (1966) examined the effects of different pesonality characteristics on time utilized in decision-making under stress conditions. The major finding of this study was that extroverts utilized significantly less time in reaching decisions than introverts. Pruitt (1969) studied the effects of time as a motivating factor in negotiations. The major finding was that more and greater concessions are made by all negotiating parties when time is used to create pressure.

Studies dealing with group member satisfaction and quality of decision are a little more abundant than those dealing with time. Collins and Guetzkow (1966) summarized and evaluated this research. In comparing the two dependent variables of the present study, the authors indicated that early research showed a negative relationship between quality of decision and member satisfaction. In view of the total spectrum of research, Collins and Guetzkow indicated that member satisfaction will be high if the "absolute" quality of the decision-making group is high, or if previous groups have been low in quality. Bostrum (1970) concluded that member satisfaction can be a function of the ability to control participation by originating messages. Meslin and Dunphy (1964), through a review of thirty-seven previous studies, indicated that member satisfaction is related to three variables: 1) status consensus; 2) perceived goal attainment; and 3) perceived freedom to participate.

Previous research has not seemed to establish time as a viable independent variable in communication research. Also, research has not yet investigated the possibility of peculiar relationships between time, member satisfaction, and perceived accuracy.

Pilot Study

In order to create representative time limits for a specific task, the following pilot study was devised.

Methodology

Twenty subjects were randomly assigned to four groups of five members. Each group was asked to establish a priority list of fifteen items to be used for survival on the moon. The list was originally created by the National Aeronautics and Space Administration. A copy of this list is included in the appendix.

Measurement

The only measurement made in this study was the elapsed time of the discussions. The discussions were considered to have begun with the first word spodin by a group member and finished with the completion of the priority list.

Results

The mean time length of all discussions was twenty-four and one half minutes.

Major Study

Methodology

Two hundred-twenty students enrolled in basic speech courses at Indiana University were ramdomly assigned to twenty-eight groups of five members. The groups were then assigned to four "time limit" conditions (short, medium, long, and none). Each group was asked to establish a ranking of the priority list of items recommended by the National Aeronautics and Space Administration for survival on the moon. Following this, each member was asked to complete satisfaction measures following the decision.

Definitions

The medium time limit was the mean score of the pilot study rounded to the nearest 1/4 minute.

The short time limit was found by computing 1.5 standard deviations from the medium time limit.

The long time limit was found by computing 1.5 standard deviations from the medium time limit.

The no time limit condition was restricted only by the length of the class in which the students were involved.

The correctness of each group's decision was determined by correlating the moon survival priority list created by the group with the "correct" list created by the National Aeronautics and Space Administration.

Member satisfaction and perceived accuracy were measured on two seven point bi-polar adjective scales.

Research Questions

1. Is time limit a viable independant variable for investigating the decision making process?
2. Will member satisfaction with group decision vary with time limit conditions?
3. Will perceived accuracy of group decision vary with time limit conditions?

Results

The group ranks were correlated to the "correct" rankings, and the correlation coefficients were used in an analysis of variance (Table 1).

Table 1- Correctness Across Time Limits

	Sum of Squares	DF	Mean Squares	F
Between Groups	.1126	3	.0375	2.4425*
Within Groups	.6148	40	.0154	
Total	.7274	43		

* Significance at .075

The resultant F ratio was nonsignificant, but the pattern of the mean scores indicate an increase in group accuracy of decision from short to long time conditions (Table 2).

Table 2- Mean Correctness Scores

Treatment	Mean	N	Rank
Short	.70129	11	1
Medium	.71753	11	2
Long	.82241	11	4
None	.79318	11	3

* Higher mean score = greater correctness

The comparatively small sample size could be partially responsible for the moderately low level of significance.

These data were then viewed in terms of the actual time used by the groups, rather than the time limits set by the experiment (Table 3). When viewed from the perspective of

Table 3- Time Limits and Actual Time Used

	Short	Medium	Long	None
Time Limit	15.5	24.5	33.5	--
Time Used	12.5	14.5	23.8	20.6

* Reported in minutes

actual time used, the mean correctness scores yield a linear trend from the short time condition to the no time limit condition. Also the average amounts of time used in the four conditions seems to indicate only two functional time conditions. The short and medium time limit conditions are very similar in time used as are the long and no time limit conditions. As a result of this observation the data were collapsed into two time conditions for the purpose of further analysis. This analysis yielded a "t" score of 2.68328 (significant at .02) which would indicate a difference between the two more general time conditions. This result seems to substantiate the need for a larger sample size in the original analysis.

The reliability coefficient of the two satisfaction scales was .482. As a result of this low reliability, the scores for each scale were analyzed seperately. An analysis of variance was run with each scale across the four time conditions. For scale I the F ratio was .4466. Although this was far from significant, the pattern of mean scores was the same as that of the correctness mean scores(Table 4).

Table 4- Mean Satisfaction Scores

Treatment	Mean	N	Rank
Short	1.9273	55	1
Medium	2.0364	55	2
Long	2.1273	55	4
None	2.1091	55	3

* Low scores = less satisfaction

The F ratio of .7665 for scale II was also nonsignificant.

The mean scores did not follow the pattern of the two previously cited (Table 5).

Table 5- Mean Satisfaction Scores (Scale II)

Treatment	Mean	N	Rank
Short	2.3455	55	1
Medium	2.6909	55	4
Long	2.4909	55	2
None	2.5818	55	3

The two "perceived accuracy" scales yielded nonsignificant F scores of .2926 and 1.0627. There also was no apparent pattern of mean scores.

Discussion and Suggestions for Future Research

The obtained results would seem to indicate that time limit can function as a viable independent variable in group decision making for the type of task used. The findings of course raise questions about time in relation to task dimensions such as task complexity and member involvement with the task.

The use of more complicated, or at least more time consuming tasks could enhance the effects of the time limit variable. It may be very difficult to identify realistic time parameters when dealing with a task as simple as the one used. Analysis of member involvement with the group task would seem to be a profitable modification for future research. It seems that time could interact with involvement to effect member satisfaction.

In addition to examining these and other elements, future research of this type should encorporate several improvements over the present study. One major improvement would be to increase the size of the subject population. Although this study had a total sample size of 220, after the group and condition divsions, there was an n of only eleven in each condition.

The measurement of satisfaction presents another set of problems. The low reliability score would seem to make it obvious that a more systematically devised group of satisfaction scales would be a necessary addition to any replication of a study of this type.

APPENDIX

Your space-craft has just crash landed on the moon. You were scheduled to rendezvous with a mother ship 200 miles away on the lighted surface of the moon, but the rough landing has ruined your ship and destroyed all the equipment on board, except for the fifteen items listed below.

Your crew's survival depends on reaching the mother ship, so you must choose the most critical items available for the 200 mile trip. Your task is to rank the 15 items in terms of their importance for survival. Place number one by the most important item, number two by the second most important, and so on through number 15, the least important.

Consensus is difficult to reach, so not every ranking will meet with everyones complete approval. Complete unanimity is not the goal -- it is rarely achieved. But each individual should be able to accept the group ranking on the basis of logic and feasibility. Avoid conflict reducing techniques such as majority vote, averages, coin-flips,and bargaining.

____ Box of matches
____ Food Concentrate
____ Fifty feet of nylon rope
____ parachute silk
____ Solar powered portable heating unit
____ Two .45-caliber pistols
____ One case of dehydrated milk
____ Two 100-Pound tanks of oxygen
____ Stellar map
____ Self-inflating life raft
____ Magnetic compass
____ Five gallons of water
____ Signal flares
____ First aid kit containing injection needle
____ Solar-powered FM receiver-transmitter

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